

REMARKS

In view of the foregoing amendments and following remarks, reconsideration of this application and early allowance of the application is respectfully requested.

Claims 1-28 are pending in this application. Claims 1, 4-9, 12-17, 20-23, 27 and 28 have been amended. No new matter has been introduced.

Claims 1-28 stand rejected on formal grounds under 35 U.S.C § 112 as being indefinite. Claims 1-28 also stand rejected on substantive grounds under 35 U.S.C § 103(a) as being obvious over Matsuo U.S. Patent No. 6,345,869 in view of Kawamoto U.S. Patent No. 6,254,202. Applicants respectfully traverse the foregoing claim rejections for the reasons detailed below.

Regarding the claim rejections under 35 U.S.C § 112, the Examiner states that the ABS “seems to be the system to effect braking” and questions whether the reference to braking the drive axle via the valves of the “anti-slip regulation system” in independent claims 1, 9, 17 and 23 should instead refer to the ABS. Applicants confirm the accuracy of the recitation in claims 1, 9, 17 and 23, as filed, that the drive axle is automatically braked via the valves of the anti-slip regulation system (“ASR”) by the claimed further system constructed and arranged to automatically brake the vehicle.

The ASR prevents spinning of the drive wheels by actively braking the slipping drive wheels; the ABS prevents wheel lock by pulsing brake pressure to the slipping wheels during braking (see e.g., paragraph [0002] of the present published application). As described in the application specification, in vehicles equipped with additional systems which provide automatic braking independent of driver control, such as, for example, rollover stability control (“RSC”) systems or adaptive cruise control (“ACC”) systems, the ASR valves 8 (with

appropriate actuation of the ABS valves 6 to prevent undesired wheel lockup) are utilized to brake the drive axle wheels (see e.g., paragraphs [0034] and [0037]).

Applicants have amended independent claims 1, 9, 17 and 23 and dependent claims 5, 8, 13, 16, 21, 22, 27 and 28 as to form. Particularly, the recitation in these claims, as filed, of “one or more valves” (referring to the ASR) has been replaced by “at least one valve.” Similarly, the recitation in these claims, as filed, of “one or more brake cylinders” has been replaced by “at least one brake cylinder.” No new matter has been introduced.

The Examiner also asserts that the recitation “vehicle reference speed formed by said antilock control system” in claims 4, 6, 9 and 23 is unclear (it is noted that the Examiner cites claims 4, 6, 9, and 23 but that the recitation also appears in claims 12, 14 and 20). Applicants have amended claims 4, 6, 9, 12, 14, 20 and 23 to replace the recitation “formed by” with “calculated by.” No new matter has been introduced. Applicants submit that amended claims 4, 6, 9, 12, 14, 20 and 23 are sufficiently definite, and notice to this effect is respectfully requested.

The Examiner further contends that claims 8, 16, 22 and 28 are indefinite in their use of the recitation “the previous deceleration.” While Applicants submit that these claims are sufficiently definite as filed, Applicants have amended claims 8, 16, 22 and 28 to replace “the” with “a” in this recitation. Notice to the effect that claims 8, 16, 22 and 28 are sufficiently definite is respectfully solicited.

Turning now to the substantive claim rejections under 35 U.S.C § 103(a), Applicants respectfully traverse these claim rejections. As now explained, a review and reading of the cited Matsuo and Kawamoto references makes clear that these references,

whether taken alone or combined, do not disclose, yield or even suggest Applicants' claimed invention.

The Matsuo patent cited by the Examiner describes the influence that pressure control valves have on the flow of pressurized brake fluid in a vehicle braking system. As described in Matsuo, when a valve switches from a closed state to an open state (e.g., to permit the brake fluid to flow from a pressurizing device to the brake cylinder), the output pressure of the brake fluid drops. Matsuo is particularly concerned with minimizing the effect that the change in the operating state of the valves has on the pressure of the pressurized fluid by regulating the pressurizing device based on the status of the valves in the braking system and/or based on the running condition of the vehicle. A control system monitors the status of the valves and monitors various conditions of the vehicle through sensors such as wheel speed sensors, load sensors, a steering angle sensor and a distance sensor. The Matsuo system forecasts changes in the running condition of the vehicle or changes in the status of a valve state and adjusts the pressure of the braking fluid in anticipation of such changes.

The cited Kawamoto patent describes a braking system for a vehicle (with automatic distance control capability) having an emergency backup function. The braking system according to Kawamoto employs an hydraulic pressure pump (which can be part of an ABS or ASR system) to supplement braking pressure generated by a master cylinder if the master cylinder cannot provide sufficient pressure or if the master cylinder fails. Vehicle ECUs determine the desired vehicle deceleration (based on the distance to an object in front of the vehicle) and actuate the hydraulic pressure pump if that deceleration cannot be achieved by the master cylinder.

Matsuo and Kawamoto, whether taken alone or combined, do not teach, yield or suggest the present claimed invention. Neither Matsuo nor Kawamoto are concerned with, and accordingly nowhere teach or suggest, effecting brake demand initiated by the vehicle driver over and above automatic active braking; and, more particularly, neither of these cited references teach or suggest a braking system or method of braking whereby (i) the wheel speed of a non-driven axle is determined, (ii) the wheel speed of a driven axle is determined, (iii) the wheel speed of a non-driven axle is compared with the wheel speed of a driven axle or a calculated reference speed, and (iv) brake pressure in response to driver braking demand is provided, irrespective of braking from an ACC, RSC or other further automatic active braking system, when the difference between the wheel speeds, or the difference between the wheel speed of a non-driven axle and the reference speed, exceeds a pre-defined value, as affirmatively recited in the independent claims of the present application as filed.

The Examiner's reliance on Kawamoto is based on the articulated view of the reference as teaching that automatic braking control may not provide enough braking pressure to slow or stop the vehicle in emergency situations. Applicants respectfully submit that, in the context of the present invention, this reliance is misplaced. Kawamoto is concerned only with automatic braking control -- with respect to both the primary automatic driving braking system and the automatic backup system actuated when a defect in the primary system is detected or when the primary system fails -- and, unlike the present claimed invention, brake demand initiated by the vehicle driver over and above automatic braking is not at all a concern of Kawamoto.

The Examiner also contends that it is "notoriously well known to effect different types of braking control based on the wheel speed differences of the driven and non-

driven wheels/axles of a vehicle.” The Examiner has, however, offered no evidence to support the asserted conclusion that it is obvious to use a comparison of wheel speeds or a comparison of wheel speeds with a calculated vehicle reference speed (avoiding additional hardware/sensors) to ascertain whether braking initiated by the vehicle driver is being applied at a level greater than that resulting from automatic vehicle braking and to relay demanded brake pressure (i.e., pressure at the desired level) to the brake cylinders. Applicants respectfully request that the Examiner provide a specific teaching which supports the Examiner’s conclusion, or withdraw the rejection on this ground.

In view of all the foregoing, it is submitted that one of ordinary skill in the art who reads and understands Matsuo and Kawamoto would not be motivated, let alone equipped, to arrive at the present invention as claimed in independent claims 1, 9, 17 and 23. Accordingly, it is submitted that claims 1, 9, 17 and 23 are patentable over the cited references, whether taken alone or combined, and notice to this effect is earnestly solicited.

It is further submitted that dependent claims 2-8, 10-16, 18-22 and 24-28 are also allowable by reason of their dependency from independent claims 1, 9, 17 and 23, as well as for the other features and steps recited therein. Notice to this effect is also earnestly solicited.

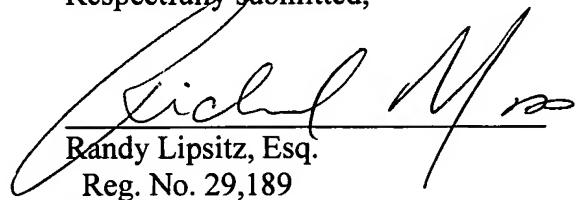
The references cited by the Examiner in the Office Action but not applied are believed to be merely of interest, and no further discussion of the references is deemed necessary or appropriate at this time.

On the basis of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance, and notice to this effect is respectfully requested. The Examiner is invited to contact Applicants’ undersigned

attorneys at the telephone number set forth below if it will advance the prosecution of this case.

No fee is believed due with this Response. Please charge any fee deficiency to the undersigned attorneys' Deposit Account No. 50-0540.

Respectfully submitted,



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